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To: U.S. Patent and Trademark Office – From: Christian R. Andersen  
 MAIL STOP: Appeal Brief - Sr. Paralegal – Intellectual Property  
 PATENTS  
 Examiner: D.M. NGUYEN  
 Group Art Unit: 2643  
 Confirmation No.: 2216

Fax:	703-872-9306	Pages with Cover:	24
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**FORMAL SUBMISSION OF:**

- |                                 |                  |
|---------------------------------|------------------|
| 1) Transmittal of Appeal Brief; | 3) Appeal Brief. |
| 2) Fee Transmittal; and         |                  |

Title: NETWORK PLANNING TRAFFIC MEASUREMENT PROGRAM  
 Serial No. 09/783,117  
 Filing Date: February 15, 2001  
 First Named Inventor: Thomas P. NOLTING  
 Atty. No. 00-VE06.12C1RCE

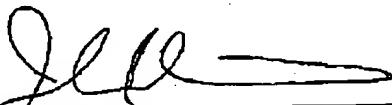
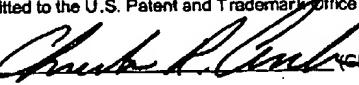
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Date of Transmission: June 15, 2005

<b>TRANSMITTAL OF APPEAL BRIEF</b>		Docket No. 00-VE06.12C1RCE	
In re Application of: Thomas P. Nolting			
Application No.	Filing Date	Examiner	Group Art Unit
09/783,117	February 15, 2001	D. M. Nguyen	2643
Invention: NETWORK PLANNING TRAFFIC MEASUREMENT PROGRAM			
<b><u>TO THE COMMISSIONER OF PATENTS:</u></b>			
Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed: <u>April 20, 2005</u> .			
The fee for filing this Appeal Brief is <u>\$ 500.00</u> .			
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<input checked="" type="checkbox"/> The Director is hereby authorized to charge any additional fees that may be required or credit any overpayment to Deposit Account No. <u>07-2347</u> . This sheet is submitted in duplicate.			
		Dated: <u>June 15, 2005</u>	
<b>Appeal Brief Transmittal</b> I hereby certify that this correspondence is being transmitted to the U.S. Patent and Trademark Office by facsimile to Examiner Duc Nguyen at 703-872-9306, on the date shown below.			
Dated: June 15, 2005		Signature:  (Christian R. Andersen)	

PTO/SB/17 (12-04v2)  
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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<b>Effective on 12/08/2004.</b> <b>Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).</b>		<b>Complete if Known</b>	
<b>Fee TRANSMITTAL</b> <b>For FY 2005</b>		Application Number	09/783,117
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Filing Date	February 15, 2001
		First Named Inventor	Thomas P. Nolting
		Examiner Name	D. M. Nguyen
		Art Unit	2643
TOTAL AMOUNT OF PAYMENT	(\$)	500.00	Attorney Docket No.
00-VE06.12C1RCE			

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**FEE CALCULATION**
**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fees Paid (\$)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

**2. EXCESS CLAIM FEES**
**Fee Description**

Each claim over 20 (including Reissues)

Small Entity
Fee (\$)
Fee (\$)
50
25

Each independent claim over 3 (including Reissues)

200
100

Multiple dependent claims

360
180
Total Claims      Extra Claims      Fee (\$)
Fee Paid (\$)
Multiple Dependent Claims
Fee (\$)
Fee Paid (\$)
Indep. Claims      Extra Claims      Fee (\$)
Fee Paid (\$)

I hereby certify that this correspondence is being transmitted to the U.S. Patent and Trademark Office by facsimile to Examiner Duc Nguyen at 703-872-9308, on the date shown below.

Dated: June 15, 2005 Signature:

Christian R. Andersen

Docket No.: 00-VE06.12C1RCE  
(PATENT)

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Patent Application of:

Thomas P. Nolting

JUN 15 2005

Application No.: 09/783,117

Art Unit: 2643

Filed: February 15, 2001

Examiner: D. M. Nguyen

For: NETWORK PLANNING TRAFFIC  
MEASUREMENT PROGRAM

### APPEAL BRIEF

#### Mail Stop Appeal Brief- Patents

Commissioner for Patents

United States Patent and Trademark Office

Alexandria, VA 22313-1450

Dear Sir:

This appeal is from the decision of the Primary Examiner dated February 9, 2005 ("Final Office Action"), finally rejecting claims 1-17 and 23-60, which are reproduced as an Appendix to this Appeal Brief. The Notice of Appeal was filed on April 20, 2005. This application was filed on February 15, 2001.

### I. REAL PARTY IN INTEREST

The real party in interest is Verizon Services Corp. (formerly Bell Atlantic Network Services, Inc), a Delaware corporation having a place of business at 1310 North Court House Road, Arlington, Virginia, 22201.

### II. RELATED APPEALS AND INTERFERENCES

Applicant (hereinafter "Appellant") is not aware of any related appeals or interferences that would affect the Board's decision on the current appeal.

### III. STATUS OF CLAIMS

Claims 1-17 and 23-60 are pending, and are the subject of this Appeal. In the Final Office Action, all pending claims were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. 5,592,530 ("Brockman") in view of U.S. 5,905,985 ("Malloy").

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**IV. STATUS OF AMENDMENTS**

No Amendment After Final Rejection has been entered into the prosecution record of the present application.

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

Telecommunications network design involves predicting future demand based on past usage, evaluating the capacity of equipment and facilities, and providing the correct amount of capacity in the proper configuration, all in time to meet service objectives. Accordingly, it is important to properly balance the amount of equipment and trunking provided with service requirements and costs. Virtually every element of a telecommunications system is subject to failure or overload. Therefore, effective testing, monitoring, control, and maintenance is essential to obtain an acceptable level of performance. (Specification, page 3, line 21 - page 4, line 5.)

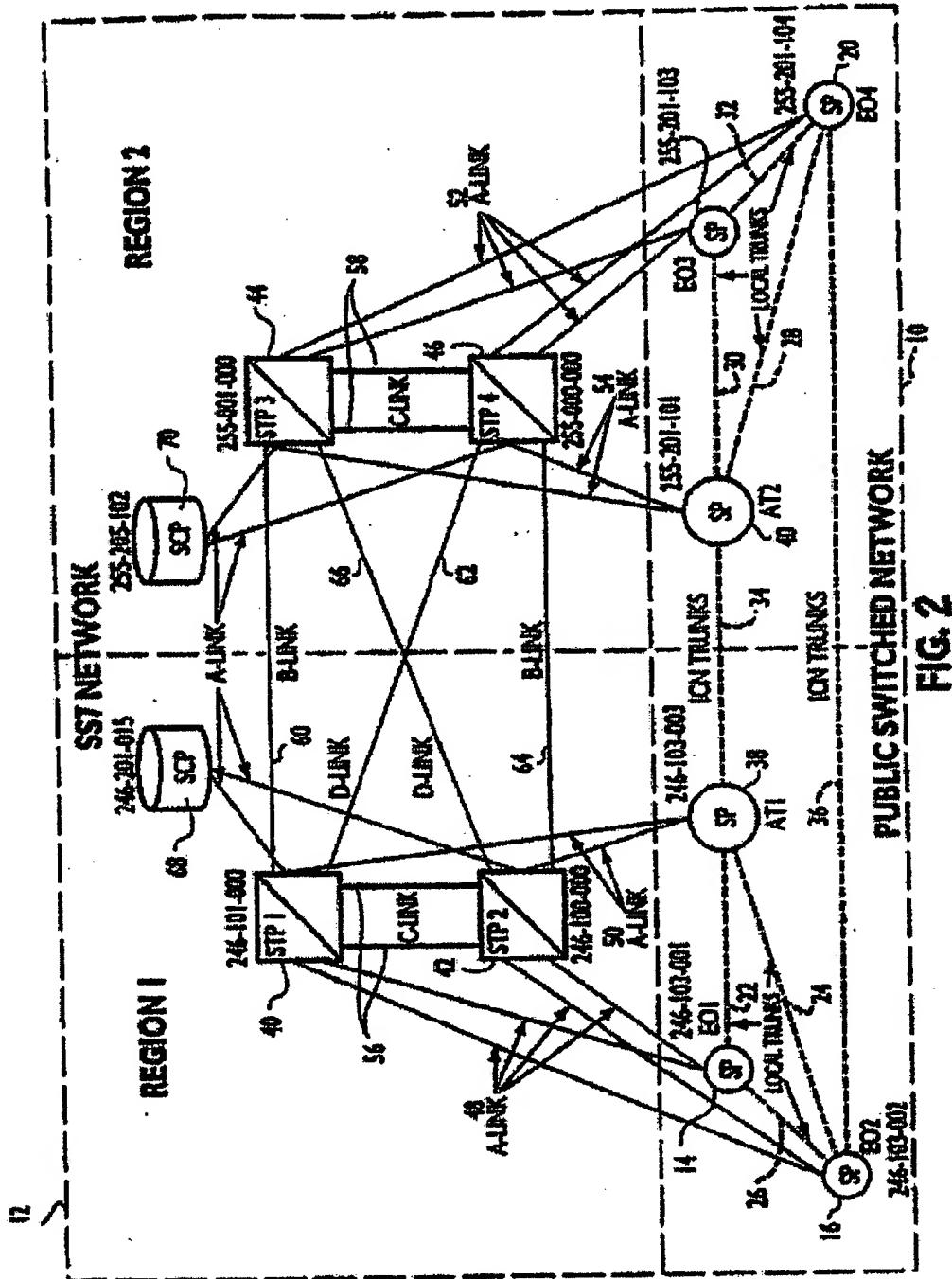
The present claims recite methods and systems that provide information that may be used to measure network traffic and support network planning. Such information may be obtained from the operation of an SS7 common channel interoffice signaling network, used to control the signaling for a switched telephone network. (Specification, page 13, lines 11-21). The switched telephone network consists of a series of central offices which are conventionally referred to as signaling points (SPs) in reference to the SS7 network. Certain of these SPs comprise end offices (EOs). (Specification, page 13, line 24 – page 14, line 1.) SPs are connected by analog trunks or voice or similar circuits. The SPs in a given region are connected by local trunks. The SPs in one region are connected to the SPs in other regions via inter-exchange carrier network trunks or ICN trunks connected to Access Tandems (ATs). (Specification, page 14, line 21 – page 15, line 1.) An SS7 network comprises a series of Signal Transfer Points (STPs). (Specification, page 15, lines 5-6.)

For ease of reference, Figure 2 from the application as originally filed, showing an SS7 network 12, is reproduced herein below. As can be seen in the Figure, each STP in the network 12 is connected to the SPs in the network by an A link 48, 50, 52, or 54. C links 56 and 58 connect respective mated pairs of STPs, each mated pair serving its respective transport area. B and D links 60, 62, 64, and 66 provide connections between other pairs of

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STPs. The A, B, C and D links are physically identical, with the designation relating to cost



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in terms of ease of access. The A links represent the lowest cost. B and D links have the same route cost with respect to SS7; the D designation is used only because it extends diagonally in the drawing. (Specification, page 15, lines 5-25.)

The C links are used to communicate between the two paired STPs for network management information, and also constitute another route. The C links communicate between the paired STPs for network management information and SS7 message routing. The STP pair cannot function without the C links. Therefore, unnecessary utilization of the C links causes congestion and prevents the paired STPs from performing their intended function. (Specification, page 15, line 25 – page 16, line 9.)

The SS7 network constitutes a highly redundant data network. By way of example, an SS7 message from end offices EO2 to EO4 might travel any one of 8 possible routes. Such a message could go from EO2 to STP1, from STP1 to STP3, STP3 to EO4. One variation on that route would be from STP1 down the D link 62 to STP4 to EO4, and so forth. In the event that a link between STP3 and EO4 was lost, an SS7 route could be established from EO2 to EO4 via STP1 to STP3 and then via C link 58 to STP4 to EO4. However, such a route would be undesirable in that it unnecessarily uses the C link. A links provide direct connectivity while C links provide circuitous routes using extra switches, a situation to be avoided. Another reason for not using the C link is to avoid tying up the entire STP3-STP4 pair. Thus, an alternate route would be from STP1 via D link 62 to STP4 to EO4.

(Specification, page 16, line 21 – page 17, line 9.)

Real time monitors on selected SS7 links collect interoffice signaling messages. Site processors for the SS7 network compile data from the signaling messages relating to individual calls to form call detail records (CDRs) for all interoffice call attempts.

(Specification, page 11, lines 1-7.) Flat files including the CDRs are delivered to the Telco WAN (wide area network) and from the WAN to a central SS7 CDR flat file server. The server provides a relational database for the collected SS7 flat files. Further, because the site processors are capable of assembling and processing information with respect to inter-switch calls but do not handle intra-switch calls, one embodiment utilizes Automated Message Accounting (AMA) data, delivered to an AMA server, to obtain call details at each stage of a connection. The CDR flat file server and the AMA server are connected to each other, and to an On-Line Analytical Processing (OLAP) server, which is configured to provide fast access to summarized data. (Specification, page 29, line 23 – page 31, line 19.)

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The OLAP server interfaces with user work stations, including those connected to the Internet, allowing users to receive predefined or "on-the-fly" reports. (Specification, page 32, lines 19-23.) Accordingly, network operations personnel are provided with the ability to analyze a variety of network traffic patterns. For example, the number of calls to particular numbers during various time periods and the hold time of the calls may be determined in order to identify the numbers of Internet Service Providers (ISPs). Another example would involve a situation where traffic analysis may indicate the amount of traffic between two end offices and the percentage thereof routed through a tandem office, to allow network planners to design trunk upgrades between the various offices and/or to plan the addition of new offices. In general, a network service provider could receive reports relating to call volumes, telephone numbers called, switch usage, call times, etc. (Specification, page 11, lines 2-22.)

#### **VI. GROUNDS OF REJECTION FOR REVIEW ON APPEAL**

Appellant requests review of the Examiner's rejection of claims 1-17 and 23-60 under 35 U.S.C. § 103 as being unpatentable over Brockman in view of Malloy

#### **VII. ARGUMENT**

The Examiner has failed to meet the burden of stating a *prima facie* case of obviousness with respect to Appellant's claims at least because (1) Brockman and Malloy, even when combined, fail to teach or suggest each and every one of the limitations of Appellant's claims, (2) there is no teaching or suggestion in the prior art references to combine Brockman and Malloy to achieve the claimed invention; and (3) the Examiner has not shown that one of ordinary skill in the art would have had a reasonable expectation of success in attempting to combine Brockman and Malloy. *See MPEP § 2143.* Accordingly, Appellant respectfully urges this Board to reverse the rejections of claim 1-17 and 23-60 for any of the independent reasons set forth below.

##### **A. The Prior Art of Record Fails To Teach A "voice traffic load report" As Required By Appellant' Independent Claims.**

The combination of Brockman and Malloy fails to teach or suggest all limitations of Appellant's independent claims. Independent claims 1, 23, 29, 38 and 44 recite "generating an on line network voice traffic load report from the multidimensional data base." Independent claims 32 and 43 recite that a "switched telecommunications network is comprised of . . . an analytical processing means . . . providing a multidimensional database .

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... to provide voice traffic load reports." As explained below with respect to claim 1, taken as an exemplary claim for purposes of this Appeal Brief, these limitations are nowhere found in either Brockman or Malloy. In particular, contrary to the Examiner's assertion (Final Office Action, page 3), nowhere does Brockman teach or suggest "a network voice traffic load report."

The purpose of generating the network voice traffic load report, as required by claim 1, is to alert users to voice traffic congestion on the switched telecommunications network. To achieve this purpose, signaling traffic on the SS7 network is monitored, although the signaling traffic itself is not what is of interest. As Appellant explains in the Specification (page 38, line 24 – page 39, line 1), "it has been found that it is possible through appropriate analysis of the signaling traffic data to determine not only that a call did not complete but also the point at which it failed, i.e., the point of congestion." In other words, as is reflected by the plain requirements of claim 1, Appellant has clearly disclosed and claimed monitoring signaling traffic and reporting on the health of voice communications rather than reporting on the robustness of the signaling traffic itself.

Brockman, on the other hand, clearly contemplates monitoring STPs to determine the health of an SS7 network only. It is well known that an SS7 network provides solely control messaging (call connections, call disconnects, busy signals, etc.), and not voice traffic circuits. Accordingly, Brockman discloses that "[i]f an SS7 network is not functioning, or if portions of it are not operating, the phone system simply cannot deliver phone calls, *even though all of the voice circuits are operating properly.*" (Brockman, col. 1, lines 55-58; emphasis added.) Thus, Brockman teaches monitoring the performance of the telephone switch (STP) in the SS7 network so that "one can determine error conditions at the application layer of the network." (Brockman, col. 3, lines 30-31.) Further, Brockman states that the information generated could be used for fraud detection and call detail records. (Brockman, col. 3, lines 31-33). However, despite teaching the foregoing uses of monitoring an SS7 network, Brockman contains absolutely no teaching or suggestion of generating a voice traffic load report. Indeed, Brockman teaches away from generating a voice traffic load report based on "monitoring the signaling between the end office switching systems and the signal transfer points," as required by claim 1, by explicitly stating that voice circuits may be operating properly even when some or all of an SS7 network is not functioning.

The portion of Brockman quoted by the Examiner as allegedly teaching "either [a] voice or [a] data traffic load report" (Final Office Action, page 3), in fact bolsters the

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distinction between monitoring signaling traffic to generate information about a signaling network and monitoring signaling traffic to generate a voice traffic load report. As the Examiner notes, the preamble of Brockman's claim 9 recites:

A monitoring system for a pair of telephone switches operating in mated relationship to one another such that a plurality of *call control data messages pertaining to a separate communication network* carrying voice or data signals of a particular call transaction over a selected communication channel between a calling party and a called party will always pass through one or both of said pair of switches. (Emphasis added.)

Brockman's recitation makes clear that his disclosure is directed solely to monitoring call control data messages, **not** actual voice or data calls. Brockman's call control data messages "*pertain[] to a separate communication network.*" Clearly, from the context of Brockman's recitation, the "separate communications network," i.e., the voice network, is **not** being monitored. Thus, contrary to the Examiner's misplaced reliance, Brockman's claim 9 clearly demonstrates that Brockman teaches away from Appellant's claim 1.

The Examiner makes much of the fact that Brockman states a need for detecting "mass call onset detection," i.e., detecting the situation in which a number of callers attempt to call the same number at the same time, such as to a radio station. (Final Office Action, pages 19-20.) The Examiner further points to the fact that Brockman discloses analyzing a "composite record" of switching messages to perform calling card fraud detection and service assurance applications. (*Id.*) Based on these facts, the Examiner asserts that "clearly . . . a large number of interoffice switched calls to the radio station result[] in unbalanced loading and congestion to the switch and routing." (*Id.*)

However, even if the Examiner has drawn correct conclusions from Brockman, the Examiner has still failed to show that Brockman teaches or suggests a "voice traffic load report" as is required by claim 1. That is, assuming that Brockman uses switching messages to detect fraud and to assure service, Brockman still does not teach or suggest a "voice traffic load report." Similarly, even if Brockman discusses "mass call onset," the Examiner cites no support for the proposition that "mass call onset" necessarily leads to "unbalanced loading and congestion." Moreover, simply because "unbalanced loading and congestion" exists in a network, it does not necessarily follow that a "voice traffic load report" is taught or suggested. In fact, as discussed above, a "voice traffic load report," as required by Appellant's independent claims, is nowhere taught or suggested by Brockman.

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Accordingly, the Examiner's Section 103 rejection of all pending claims should be reversed at least for the foregoing reasons.

**B. Malloy Fails To Teach Or Suggest Any Limitations Of Appellant's Claims.**

The Examiner acknowledged that Brockman fails to teach the following limitations of Appellant's independent claims:

**Claims 1 and 23**

performing an on line analysis program to obtain a multidimensional database from the multiple switched calls to multiple called numbers of said relational files, said on line analysis program supporting interactive analysis for one or more users; (See Final Office Action, pages 3, 7.)

**Claim 29**

performing an on line analysis program to obtain a multidimensional database from multiple switched calls of said relational files, said on line analysis program supporting interactive analysis for one or more users; (See Final Office Action, page 7.)

**Claim 32**

on line analytical processing means providing a multidimensional database and supporting interactive analysis for one or more users, wherein said relational files are processed to consolidate and summarize successful and unsuccessful attempts to route calls to multiple called numbers through said tandem switching system and provide voice traffic load reports thereof. (See Final Office Action, page 10.)

**Claim 38**

processing the collated common channel signaling and automatic message accounting output to provide a multidimensional database to consolidate and summarize ongoing multiple switched calls and provide voice traffic load reports thereof. (See Final Office Action, page 13.)

**Claim 43**

on line analytical processing means supporting interactive analysis for one or more users and providing a multidimensional database, including information relating to said call set up and tear down obtained from said relational files; (See Final Office Action, page 16.)

**Claim 44**

performing an on line analysis program to obtain a multidimensional database from the multiple interoffice calls to multiple called numbers of said relational files, said on line analysis program supporting interactive analysis for one or more users. (See Final Office Action, page 18.)

The Examiner contended that the foregoing limitations are taught by Malloy. However, Malloy contains absolutely no teaching or suggestion having anything to do with applying on-line analysis or creating a multi-dimensional database to a call network, as is required by

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Appellant's independent claims. (*See* Malloy, Abstract.) Malloy is directed solely to "using a relational database management system to support on-line analytical processing (OLAP) systems." (*Id.*) None of the portions of Malloy cited by the Examiner discuss anything more than generic OLAP processing. (*See* Malloy, Fig. 1; col. 2: 44 – 3: 2; col. 3: 44-61; col. 4: 50-60; col. 5: 3-20; col. 6: 10-37; col. 10:35 – 11: 34; col. 11: 55- 12:15.) In particular, Malloy cannot possibly teach or suggest obtaining a multidimensional database relating to "multiple switched calls" (claims 1, 23, 29, and 38), "multiple called numbers" (claims 32 and 44), or "call set up and tear down" (claim 43).

Therefore, at least because Malloy fails to teach any of the elements of Appellant's claims for which it is cited, the rejection of Appellant's claims should be reversed.

**C. One of Ordinary Skill In The Art Would Not Have Combined Brockman and Malloy.**

The Section 103 rejection of all pending claims should be reversed for the further independent reason that the Examiner provided no motivation for the combination of Brockman and Malloy, much less motivation taught or suggested by the prior art of record. Regarding each of the limitations of Appellant's claims quoted in Section B above, acknowledged to be missing from Brockman, the Examiner contended that one of ordinary skill in the art would have been motivated to modify Brockman with Malloy, and that Malloy would have compensated for the deficiencies of Brockman. However, in failing to provide motivation to combine Brockman and Malloy in the prior art of record, even if Brockman and Malloy could have been combined, the Examiner failed to meet the burden of stating a *prima facie* case of obviousness.

A *prima facie* case of obviousness requires that there be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. See MPEP § 2143; *In re Linter*, 458 F.2d 1013, 173 USPQ 560, 562 (CCPA 1972). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Moreover, the fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

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The Examiner's discussion of claim 1 is taken as exemplary. The Examiner first acknowledged that Brockman did not disclose "performing an on-line analysis program to obtain a multidimensional database, the on line analysis program supporting interactive analysis for one or more users; and provide reports thereof." (Final Office Action, page 3.) However, the Examiner asserted that this subject matter was disclosed by Malloy. Then, with no explanation, and no citation to any of the prior art of record, the Examiner simply stated that "[t]herefore, it would have been obvious . . . to utilize the teachings of Malloy into the teachings of Brockman in order to provide a multi-user client/server system which offers consistently rapid response to database access, regardless of database size and complexity." (*Id.* at 4.) In particular, the Examiner provided no explanation, much less support, for the proposition that one of ordinary skill would have seen Brockman as needing "consistently rapid response to database access, regardless of database size and complexity," much less that Malloy would have provided such a result in the context of Brockman. Because the Examiner failed to provide support for the asserted motivation, the rejection of Appellant's independent claims was improper, and should be reversed.

Indeed, neither reference contains any teaching or suggestion of a motivation to combine them. In fact, Brockman and Malloy are directed to entirely different fields of endeavor. Brockman makes no hint of a multidimensional database or on-line analytical processing, and Malloy makes no hint of call networks, strongly belying any notion that either reference contains a motivation to combine with the other.

Accordingly, another independent reason justifying a reversal of the rejection of Appellant's claims is the lack of motivation in the prior art to combine Brockman and Malloy.

**D. One of Ordinary Skill In The Art Would Not Have Had A Reasonable Expectation Of Success In Attempting To Combine Brockman and Malloy.**

To meet the burden of stating a *prima facie* case of obviousness, the Examiner must further show, among other things, that one of ordinary skill in the art would have had a reasonable expectation of success in combining the cited references. *See MPEP § 2143.* Here, the Examiner failed to state, much less show, that there would have been a reasonable expectation of success for one of ordinary skill in the art in attempting to combine Brockman and Malloy. Indeed, neither reference on its face presents any reason to think that it could have been combined with the other. Brockman, as noted above, teaches monitoring a signaling network, and provides no teaching or suggestion of on-line analytical processing.

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Malloy, in contrast, as noted above, is directed solely to "using a relational database management system to support on-line analytical processing (OLAP) systems." (Malloy, Abstract.) Given two references from disparate fields of endeavor, and given that the Examiner provided absolutely no indication that one of ordinary skill in the art would have reasonably expected success in combining them, the Examiner's rejection of Appellant's claims based on those two references, Brockman and Malloy, should be reversed for at least this additional independent reason.

### CONCLUSION

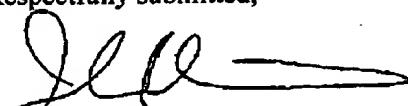
In view of the foregoing arguments, Appellant respectfully submits that the pending claims are patentable over the cited references. The Examiner's rejection of Claims 1-17 and 23-60 is improper because the prior art of record, either individually or in any legally permissible combination, does not teach or suggest each and every element of the claimed invention. In view of the above analysis, a reversal of the rejections of record is respectfully requested of this Honorable Board.

Appellant believes that no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 07-2347, under Order No. 00-VE06.12C1RCE, from which the undersigned is authorized to draw. To the extent necessary, a petition for extension of time under 37 C.F.R. § 1.136 is hereby made, the fee for which should be charged to the above account.

Respectfully submitted,

Date: June 15, 2005

By:

  
Joseph R. Palmieri, Reg. No. 40,760  
Attorney for Applicants  
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APPENDIX - CLAIMS ON APPEAL

1. In a switched telecommunications network having end office switching systems controlled by a common channel signaling system connected to the end office switching systems and to paired signal transfer points, the method comprising:

monitoring the signaling between the end office switching systems and the signal transfer points and selecting the signaling relating to multiple switched calls and creating a plurality of flat files;

collating the flat files by transaction;

processing the collated flat files to create relational files relating to multiple switched calls for multiple called numbers;

performing an on line analysis program to obtain a multidimensional database from the multiple switched calls to multiple called numbers of said relational files, said on line analysis program supporting interactive analysis for one or more users; and

generating an on line network voice traffic load report from the multidimensional database based at least in part on said interactive analysis.

2. A method according to claim 1 wherein said multiple switched calls comprise completed dialed telecommunication sessions between a calling terminal and a called terminal.

3. A method according to claim 2 wherein said multiple switched calls also comprise uncompleted dialed attempts to establish telecommunication sessions between a calling terminal and a called terminal.

4. A method according to claim 3 wherein said traffic load report includes calls dialed to a designated terminal in a designated time period.

5. A method according to claim 4 wherein said report includes data relating to the time of connection of completed calls.

6. A method according to claim 5 wherein said report includes data relating to the number of uncompleted calls within a time frame.

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7. A method according to claim 2 wherein said multiple switched calls comprise completed dialed telecommunication sessions between a calling terminal and a called terminal, and said report includes calls dialed to a designated terminal in a designated time period and data regarding the lengths thereof.

8. A method according to claim 7 wherein said multiple switched calls also comprise uncompleted attempts to establish dialed telecommunication sessions between a calling terminal and a called terminal, and said report includes the uncompleted calls dialed to said designated terminal in said designated time period.

9. A method according to claim 7 wherein said report includes information regarding the routing of said calls.

10. A method according to claim 9 wherein said report includes information as to whether said calls were routed through a tandem switching system.

11. A method according to claim 10 wherein said report includes information identifying the originating switching systems, the tandem switching systems, and the terminating switching systems for said calls.

12. A method according to claim 11 wherein said report includes information as to whether said calls were routed through a tandem switching facility without routing through the tandem switching facility.

13. A method according to claim 12 wherein said report includes information as to whether said calls were routed through the switch in said tandem switching installation.

14. A method according to claim 1 wherein said common channel signaling system is an SS7 system and said monitoring occurs on A links in that system.

15. A method according to claim 14 wherein said monitoring occurs on A links to the originating switching systems and to the terminating switching systems.

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16. A method according to claim 15 wherein said monitoring also occurs on A links to a tandem switching system connected between said originating and said terminating switching systems.

17. A method according to claim 15 including the step of providing a report of calls dialed to a designated terminal in a designated time period and including identification of the originating switching systems.

23. In a switched telecommunications network having end office switching systems controlled by an SS7 common channel signaling system using packet switching via A, B, C, and D links connected to paired signal transfer points connected to one another by D links and connected by A links to the end office switching systems, the method comprising:

monitoring the signaling in said A links and selecting the A link signaling relating to call set up;

collating said selected signaling by call;

processing said collated signaling to create relational files relating to multiple switched calls for multiple called numbers;

performing an on line analysis program to obtain a multidimensional database from the multiple switched calls to multiple called numbers of said relational files, said on line analysis program supporting interactive analysis for one or more users; and

generating an on line network voice traffic load report from the multidimensional database that summarizes ongoing call attempts and completions based at least in part on said interactive analysis.

24. A method according to claim 23 including the step of providing a report of calls dialed to a designated terminal in a designated time period.

25. A method according to claim 24 wherein said report includes data relating to time of connection of completed calls.

26. A method according to claim 25 wherein said report includes data relating to the number of incompletely completed calls within a time frame.

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27. A method according to claim 25 wherein said report includes information regarding the routing of said calls.

28. A method according to claim 27 wherein said report includes information as to whether said calls were routed through a tandem switching system.

29. In a switched telecommunications network having trunked end office and tandem switching systems controlled by an SS7 common channel signaling system using packet switching via A, B, C, and D links connected to paired signal transfer points connected to one another by C links and connected by A links to end office and tandem switching systems, the method comprising:

monitoring the signaling in said A links and selecting the A link signaling relating to call set up between end office switching systems through a tandem switching system;

collating said selected signaling by call based at least in part on A link signaling to and from said tandem switching system;

processing said collated signaling to create relational files relating to multiple calls;

performing an on line analysis program to obtain a multidimensional database from multiple switched calls of said relational files, said on line analysis program supporting interactive analysis for one or more users; and

generating an on line network voice traffic load report from the multidimensional database based at least in part on said interactive analysis that summarizes successful and unsuccessful attempts to route calls to multiple called numbers through said tandem switching system.

30. A method according to claim 29 including the steps of providing reports of the identity of the end office switching systems from which calls were routed to said tandem switching system.

31. A method according to claim 30 including the steps of providing reports of the identity of the end office switching systems to which calls were routed from said tandem switching system.

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32. A switched telecommunications network having a trunked end office and tandem switching systems controlled by an SS7 common channel signaling system using packet switching via A, B, C and D links connected to paired signal transfer points connected to one another by C links and connected by A links to the end office and tandem switching systems, comprising:

monitors interfacing to the signaling in said A links and selecting the A link signaling relating to call set up between end office switching systems through a tandem switching system;

processing means collating said selected signaling by call based at least in part on A link signaling to and from said tandem switching system;

processing means processing said collated signaling to create relational files relating to multiple switched calls to multiple called numbers;

on line analytical processing means providing a multidimensional database and supporting interactive analysis for one or more users, wherein said relational files are processed to consolidate and summarize successful and unsuccessful attempts to route calls to multiple called numbers through said tandem switching system and provide voice traffic load reports thereof.

33. A switched telecommunications network according to claim 32 wherein said online analytical processing means provides a data warehouse including multiple related tables which said on line analytical processor drills into to retrieve additional information.

34. A switched telecommunications network according to claim 33 wherein said on line analytical processor is object oriented.

35. A switched telecommunications network according to claim 33 wherein at least part of said information is obtained from switching systems in said switched telecommunications network.

36. A switched telecommunications network according to claim 33 wherein at least part of said information is obtained from an automated message accounting system in said switched telecommunications network.

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37. A switched telecommunications network according to claim 33 wherein at least part of said information relates to calls completed through intra switching system connections.

38. In a switched telecommunications network having end office switching systems controlled by a common channel signaling system connected to the end office switching systems and to paired signal transfer points, and including automatic message accounting equipment recording call details of a connection transaction, the method comprising:

monitoring the common channel signaling between the end office switching systems and the signal transfer points and selecting the signaling relating to multiple switched calls;

collating the selected common channel signaling by a call of the multiple switched calls;

collating automatic message accounting equipment output recording call detail; and

processing the collated common channel signaling and automatic message accounting output to provide a multidimensional database to consolidate and summarize ongoing multiple switched calls and provide voice traffic load reports thereof.

39. A method according to claim 38 wherein said last named processing is performed at least in part by on line analytical processing means providing a multidimensional database, wherein relational data is processed to consolidate and summarize successful and unsuccessful attempts to route calls to completion.

40. A method according to claim 38 wherein said on line analytical processing means extracts data from storages in said switched telecommunications network in addition to said common channel signaling and said automatic message accounting equipment to provide said reports.

41. A method according to claim 40 wherein said storages at least in part comprise storage associated with end office switching systems.

42. A method according to claim 41 wherein said extracted data relates to equipment associated with the switching system.

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43. A switched telecommunications network having trunked end office and tandem switching systems controlled by an SS7 common channel signaling system using packet switching via A, B, C, and D links connected to paired signal transfer points connected to one another by C links and connected by A links to the end office and tandem switching systems, said network including:

monitors interfacing to the signaling in said A links and selecting the A link signaling relating to call set up between end office switching systems;

processing means collating said selected signaling by call based at least in part on A link signaling to and from said end office switching systems;

processing means processing said collated signaling to create relational files relating to multiple switched calls to multiple called numbers;

automatic message accounting equipment recording call details of call set up and tear down;

on line analytical processing means supporting interactive analysis for one or more users and providing a multidimensional database, including information relating to said call set up and tear down obtained from said relational files; and

a program for processing said multidimensional database to consolidate and summarize successful and unsuccessful attempts to route calls to multiple called numbers through said tandem switching system and to provide voice traffic load reports thereof based at least in part on said interactive analysis.

44. A voice-switching telecommunications network having service switching points controlled by a common channel signaling system connected to the service switching points and to paired signal transfer points that maintain normal operation of the voice-switching telecommunications network, the method comprising:

monitoring signaling between the service switching points and the signal transfer points and selecting the signaling relating to multiple interoffice calls over a period of time and creating a plurality of flat files;

collating the flat files by transaction;

processing the collated flat files to create relational files relating to the multiple interoffice calls for multiple called numbers;

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performing an on line analysis program to obtain a multidimensional database from the multiple interoffice calls to multiple called numbers of said relational files, said on line analysis program supporting interactive analysis for one or more users; and  
generating an on line network voice traffic load report from the multidimensional database based at least in part on said interactive analysis.

45. The method according to claim 44, wherein the service switching points are central office switches, tandem switches, or end office switches.

46. The method according to claim 44, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of unbalanced loading between the service switching points in the voice-switching telecommunications network.

47. The method according to claim 44, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of routing utilization between the service switching points in the voice-switching telecommunications network.

48. The method according to claim 44, wherein the period of time relating to the monitoring signaling between the service switching points and the signal transfer points and selecting the signaling relating to multiple interoffice calls is greater than twenty-four hours.

49. The method according to claim 1, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of unbalanced loading between the service switching points in the voice-switching telecommunications network.

50. The method according to claim 1, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of routing utilization between the service switching points in the voice-switching telecommunications network.

51. The method according to claim 23, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of unbalanced loading between the service switching points in the voice-switching telecommunications network.

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52. The method according to claim 23, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of routing utilization between the service switching points in the voice-switching telecommunications network.

53. The method according to claim 29, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of unbalanced loading between the service switching points in the voice-switching telecommunications network.

54. The method according to claim 29, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of routing utilization between the service switching points in the voice-switching telecommunications network.

55. The method according to claim 32, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of unbalanced loading between the service switching points in the voice-switching telecommunications network.

56. The method according to claim 32, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of routing utilization between the service switching points in the voice-switching telecommunications network.

57. The method according to claim 38, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of unbalanced loading between the service switching points in the voice-switching telecommunications network.

58. The method according to claim 38, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of routing utilization between the service switching points in the voice-switching telecommunications network.

59. The method according to claim 43, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of unbalanced loading between the service switching points in the voice-switching telecommunications network.

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60. The method according to claim 43, wherein the monitoring step includes monitoring for congestion in a trunking network as a result of routing utilization between the service switching points in the voice-switching telecommunications network.